



**STUDY ON COST CONTROL IN THE CONSTRUCTION
INDUSTRY BASED ON VALUE CHAIN THEORY---TAKE
CHANG'AN CONSTRUCTION COMPANY AS AN EXAMPLE**

**WEI TINGHE
6417195034**

**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE MASTER'S DEGREE OF BUSINESS
ADMINISTRATION GRADUATE SCHOOL OF BUSINESS
SIAM UNIVERSITY**

2023



**STUDY ON COST CONTROL IN THE CONSTRUCTION INDUSTRY BASED
ON VALUE CHAIN THEORY---TAKE CHANG'AN CONSTRUCTION
COMPANY AS AN EXAMPLE**

WEI TINGHE

This Independent Study has been Approved as a Partial Fulfillment of the
Requirement of an International Master of Business Administration in International
Business Management

Advisor: *Chao Qiu*
.....
(Dr.Qiu Chao)

Date: *16* / *11* / *2023*
.....

Jomphong Mongkhonvanit
.....
(Associate Professor Dr. Jomphong Mongkhonvanit)
Dean, Graduate School of Business Administration

Date: *22* / *Nov* / *2023*
.....
Siam University, Bangkok, Thailand

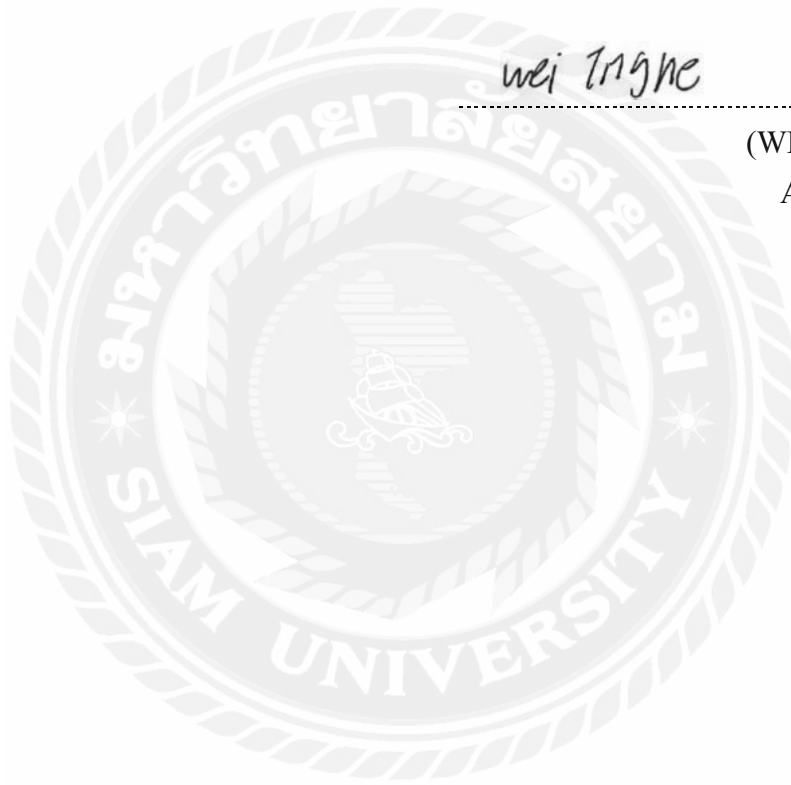
Declaration

I, WEI TINGHE, hereby certify that the work embodied in this independent study entitled “STUDY ON COST CONTROL IN THE CONSTRUCTION INDUSTRY BASED ON VALUE CHAIN THEORY---TAKE CHANG'AN CONSTRUCTION COMPANY AS AN EXAMPLE” is result of original research and has not been submitted for a higher degree to any other university or institution.

wei tinghe

(WEI TINGHE)

Aug 4, 2023



Title: Study on Cost Control In The Construction Industry Based On Value Chain Theory---Take Chang'an Construction Company As An Example
By: Wei Tinghe
Degree: Master of Business Administration
Major: International Business Management

Advisor: *Chao Qiu*
(Dr. Qiu Chao)

..... /6 / 11 / 2023
.....

ABSTRACT

In the face of scarce resources and the law of competition for survival of the fittest, cost control is an eternal topic for enterprises. In traditional accounting, people tend to pay too much attention to the cost of product production, the control of cost is concentrated on the manufacturing cost within the enterprise, and only a single driving factor is the cause of the cost, which causes the traditional cost control to be more and more unable to adapt to the development of modern enterprises. The research objectives of this study were: 1) To analyze current situation of Chang'an Construction Company, 2). To develop the cost control strategy of construction industry when doing a project in different phases based on its value chain structure.

This study adopted the documentary research method, starting from the theoretical foundation of value chain cost control, to study the cost control system based on the value chain of Chang'an Construction Company, and to get relevant insights and draw conclusions from the analysis. This is because Chang'an, as one of the better companies in the construction industry in terms of business and profitability now, has done a good job of controlling his costs. Through the in-depth study of value chain cost control in Chang'an Construction Company, we have drawn several important conclusions. A professional bidding process lays the foundation for cost-effectiveness and project profitability. The region-specific strategy adopted by Chang'an Construction makes bid preparation relevant and effective. The division of cost management into preparation and construction phases is critical. Careful cost planning, based on comprehensive site

analysis, guides spending during the construction phase. A total of three construction phases can have a significant impact on cost control during implementation: the contracting phase, the implementation phase, and the completion phase. Ongoing monitoring and timely adjustments are critical to align with that plan. Post-completion is not only an endpoint but also a phase of reflection and optimization of strategy: Efficient resource allocation and regular stakeholder engagement at the end of a project not only reduce future costs but also enhance a company's reputation.

Keywords: value chain, cost control, construction industry

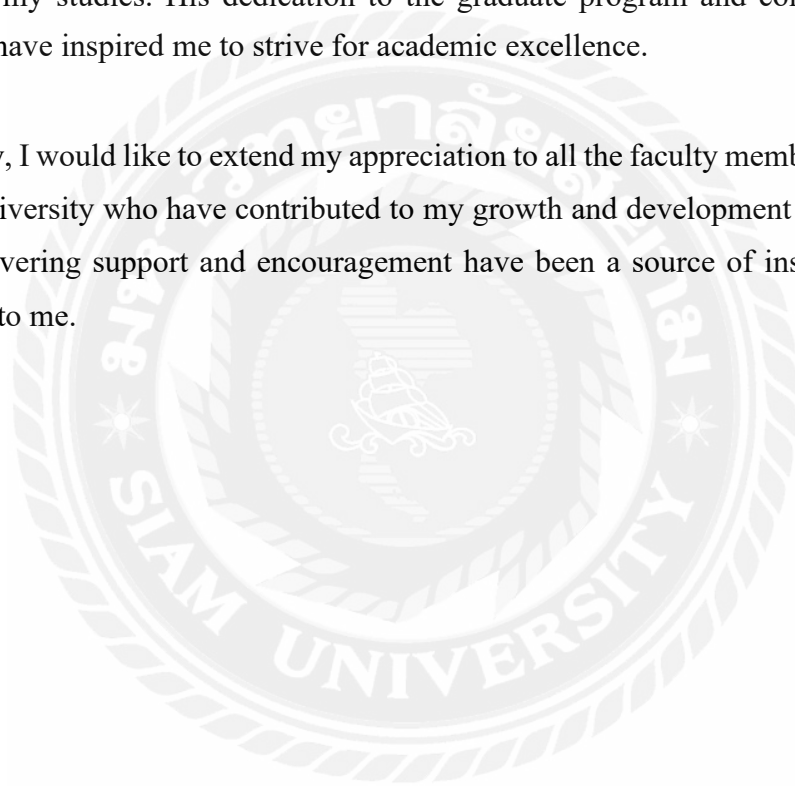


ACKNOWLEDGEMENT

I would like to express my deepest gratitude to my advisor, for his invaluable guidance, support, and encouragement throughout my independent study. His insightful comments and constructive criticism have significantly improved the quality of my work.

Additionally, I am grateful to Associate Professor Dr. Jomphong Mongkhonvanit, Dean of, the Graduate School of Business, for his support and encouragement throughout my studies. His dedication to the graduate program and commitment to excellence have inspired me to strive for academic excellence.

Finally, I would like to extend my appreciation to all the faculty members and staff of Siam University who have contributed to my growth and development as a student. Their unwavering support and encouragement have been a source of inspiration and motivation to me.



CONTENTS

Declaration.....	II
ABSTRACT	III
ACKNOWLEDGEMENT.....	V
Chapter 1 Introduction.....	- 1 -
1.1 Research Background	- 1 -
1.2 Research Problems.....	- 2 -
1.3 Objective of the study	- 3 -
1.4 Scope of the study	- 3 -
1.5 Research Significance.....	- 4 -
Chapter 2 Literatures Review	- 5 -
2.1 Construction industry.....	- 5 -
2.2 Value chain theory	- 6 -
2.3 Cost Control Theory	- 7 -
2.4 Past research.....	- 9 -
2.5 Research Framework	- 10 -
2.6 Chang'an Construction Company brief	- 11 -
Chapter 3 Research Methodology	- 13 -
3.1 Introduction.....	- 13 -
3.2 Research design	- 13 -
Chapter 4 Finding and Conclusion	- 15 -
4.1 Current situation of the value chain in Chang'an Construction Company-	15
-	
4.1.1 Project contracting.....	- 15 -
4.1.2 Construction preparation	- 16 -
4.1.3 Project construction.....	- 17 -
4.1.4 Completion and inspection.....	- 19 -
4.1.5 Post-sales warranty services.....	- 20 -

4.2. Standard for cost control.....	- 20 -
4.3 Different construction phases affect cost control.....	- 22 -
4.3.1 Cost control during the contracting phase.....	- 22 -
4.3.2 Cost control during the project implementation phase.....	- 23 -
4.3.3 Cost control during the project completion phase.....	- 23 -
4.4 Conclusion	- 24 -
Chapter 5 Recommendation	- 26 -
5.1 Recommendation	- 26 -
References	- 27 -



LIST OF FIGURES

Figure 1 Porter's value chain.....	6
Figure 2 Research Framework	11
Figure 3 Project vertical cost chart	16

Chapter 1 Introduction

1.1 Research Background

The socialist market economy has gradually improved, the process of economic globalization has been accelerated, the rapid flow of capital has made the market competition more intense, and the pressure for the survival of enterprises has been increasing rapidly, so how to seek a new mode of operation and management to maximize the wealth of shareholders is a major problem faced by every enterprise (Yin, 2014). To adapt to the needs of modern management, people have been exploring time and again since the last century. Theories and methods such as operation cost management, target cost management, total quality management, and so on have begun to appear in people's vision, and the use of these methods has enabled enterprises to gradually get rid of the constraints of traditional management concepts.

In terms of the essence of Chang'an Construction Company's competitiveness, no matter what kind of competitive strategy is adopted, cost advantage is always an important measure for obtaining core competitiveness, and it is always an important guarantee for the sustainable development of enterprises. China's construction enterprises have long had low-profit margins, mainly due to two reasons: one is the external environment, market norms are not sound, laws and regulations are not perfect, the bidding process of all kinds of backdoor operations occur frequently, the completion of the project is also the common phenomenon of arrears of construction payments; the second is the internal reasons for the enterprise, the construction enterprises for a long time, sloppy management, do not pay attention to cost control, high cost, and low revenue has been a common phenomenon (Gao, Ma, Zhang, Gao & Li, 2008). It has been a common phenomenon that high cost and low revenue have become a common phenomenon. Therefore, if construction enterprises want to gain profits and seek long-term development, they must increase the strength of cost control and improve the sloppy operation and management mode.

The construction industry is the pillar industry of China's national economy, playing an important role in promoting national economic growth and social progress. From 2002 to 2013, the gross output value of the construction industry increased from 185.27 billion yuan to 159.313 billion yuan, with a compound annual growth rate of 21.6%, and the added value of the construction industry increased from 646.5 billion

yuan to 3,899.5 billion yuan, with a compound annual growth rate of 17.74%. From 2002 to 2013, the added value of the construction industry accounted for a stable proportion of GDP between 5% and 7%, becoming an important force driving the rapid growth of the national economy (Huang, 2014). In the coming period, the process of China's urbanization will be accelerated gradually, and the contribution rate of cities to the national economy will rise steadily along with urbanization, and the development of metropolitan areas, city clusters, city belts, and central cities will provide good opportunities for the development of the construction industry (Yang, 2005).

Today, with the rapid development of the knowledge economy and information economy, the competition among enterprises is getting hotter and hotter, and so is the construction industry. The market scale of China's construction industry is huge. From 1985 to 2012, the number of enterprises in China's construction industry increased from 11,150 to 75,280, and the number of employees increased from 9.115 million to 42.672 million (Zhou, 2013). The fierce market competition makes the profit of building construction enterprises constantly compressed, and the enterprises must adapt to the increasingly fierce competitive environment through the innovation of cost control theory and the application of new cost control techniques and methods.

1.2 Research Problems

At present, some of China's construction enterprises lack systematic management of costs, cost control is only limited to the internal enterprise, which is a short-term behavior (Cheng, Zhang & Li, 2007). Company cost control defects are mainly reflected in the following three aspects: First, the management did not realize the importance of cost control, enterprises often only focus on the results ignore the prior control, only focus on short-term gains ignore the long-term development, only focus on local interests ignore the overall control, did not establish a complete cost control system; Second, the cost of control has a lagging effect, the traditional cost control of construction enterprises mainly depends on the financial department to prepare the final accounts report, but these data have a lag, the lack of systematic control, resulting in the Company cost control is a short-term behavior (Mu & Jia, 2012). Secondly, cost control is lagging, the traditional cost control of construction enterprises mainly depends on the financial department to prepare the final accounts report, but these data has a lag, the lack of systematic control, resulting in cost management can not play a role in the enterprise, the enterprise is in a very passive state, this cost management model can not be adapted to the needs of modern enterprise management (Han & Wang, 2005). Thirdly, the lack of cost management is a global, traditional cost management

from product production to sales accounting focus on the manufacturing process in the entire process, the enterprise does not pay attention to the relationship with upstream suppliers and downstream control (Pan & Wei, 2014). Enterprises do not pay attention to the interaction and cooperation with upstream suppliers and downstream customers, do not include the cost of competitors in the scope of cost management analysis, and do not break through the enterprise's barriers.

1.3 Objective of the study

This study aims to find a new entry point for cost control by analyzing the value chain cost control of Chang'an Construction Company enterprises and to provide some help to solve the problems existing in the cost control of China's building construction enterprises.

1. To analyze current situation of Chang'an Construction Company.
2. To develop the cost control strategy of construction industry when doing a project in different phases based on its value chain structure.

1.4 Scope of the study

The nucleus of this research lies at the intersection of traditional cost control mechanisms and the more advanced value chain theory, especially relevant in today's interconnected global economy. As technological innovations propel forward, and the pace of capital movements intensifies, there's an emergent demand for enterprises to adopt not just any cost control measures, but those that embrace both the internal and external facets of the value chain. The study sets out to elucidate this complex relationship, showcasing how businesses can strategically position themselves by understanding costs throughout the entirety of their production processes, reinforcing the perspective that modern cost control goes beyond mere expenditure curtailment to a broader aim of value augmentation.

By integrating the value chain theory, the study paints a comprehensive picture of how costs weave through the interconnected stages of the value chain, from initial raw material sourcing to after-sales services. Taking a practical approach, the research zeroes in on the Chang'an Construction Company, offering a case-study-based exploration of value chain cost control in action. This examination not only serves as a reflection of theoretical constructs in a tangible business setting but also as a beacon for

construction enterprises seeking to refine their cost strategies. Drawing upon a rich tapestry of academic literature, the research journeys through the historical and current discussions around value chain cost control, benefiting from the insights of renowned scholars globally. It seeks to dissect and align cost drivers with industry benchmarks and the distinct challenges and scenarios intrinsic to the case enterprise. Ultimately, the research aims to crystallize actionable strategies and recommendations, enabling businesses to fully leverage the value

1.5 Research Significance

The construction industry often faces cost overruns, impacting both profitability and infrastructure affordability. Traditional cost control methods have been more reactive than proactive. However, the application of Porter's value chain theory, which breaks down organizational activities into primary and support, offers a strategic approach to pinpoint and manage costs effectively in the construction domain. By integrating this theory, inefficiencies in processes like procurement and logistics can be identified and addressed. With the rise of sustainable construction and technological tools like Building Information Modelling (BIM), a value chain-focused approach ensures informed, data-driven decisions, optimizing cost-efficiency and delivering maximum project value. This study, therefore, holds the potential to significantly transform cost control strategies in the construction sector.

Chapter 2 Literatures Review

2.1 Construction industry

The construction industry is a production sector specializing in civil engineering, building construction, and equipment installation, as well as engineering survey and design work. Its products are all kinds of factories, houses, railroads, mines, roads, bridges, ports, pipelines, and public facilities, buildings, structures, and facilities (Sun, 2013).

Compared with other industries, construction enterprises have many significant characteristics, which determine the uniqueness of accounting for construction enterprises. Construction products are characterized by fixedness, long-term nature, and long construction period, which determine the following characteristics of the construction industry: First, production is mobile. One of the characteristics of the construction industry is that projects are fixed, but personnel and equipment are mobile. When a new project begins, new project management is established and personnel and equipment are ready (Ma, 2014). When the project is completed, the project team is disbanded. In the process of production and operation, personnel and equipment move with the construction object, continuous regional flow, when a project is completed, the relevant personnel machinery, and equipment will be transferred to the next construction object. Second, the product has a single piece. Each project has its unique program, each customer has special requirements for its product structure, shape, design, materials, use, etc., so this requires the Construction process according to the partner's requirements for the organization and design, separate costing. This results in the uniqueness of engineering projects, each project does not have the same standard, and there is no way to carry out large-scale batch manufacturing as in the case of production enterprises. Each product has its own unique "DNA", and cannot be copied. Third, the production cycle is long (Zhang, 2003). Building products are large, building from the foundation, the main structure, and roofing works to outdoor decoration, some last a few months to a year, and some need three to five years or longer. In the process of production, a lot of human, material, and financial resources need to be occupied. The project management not only needs to grasp the overall direction, but also coordinate and cooperate with the implementation of the project program, the linkage of the financial chain, and the arrangement of personnel and equipment, to ensure the successful completion of the project.

2.2 Value chain theory

Harvard Business School professor Michael Porter first introduced the concept of the value chain in his book *Competitive Advantage*. To identify the competitive advantage of an enterprise, he broke down the enterprise into a collection of activities, which are organically combined to form the enterprise's value chain. Each activity in the value chain is considered a link of value creation (Porter, 1980).

In Prof. Michael Porter's view, the value activities of a firm can be divided into two categories, basic activities, and auxiliary activities.

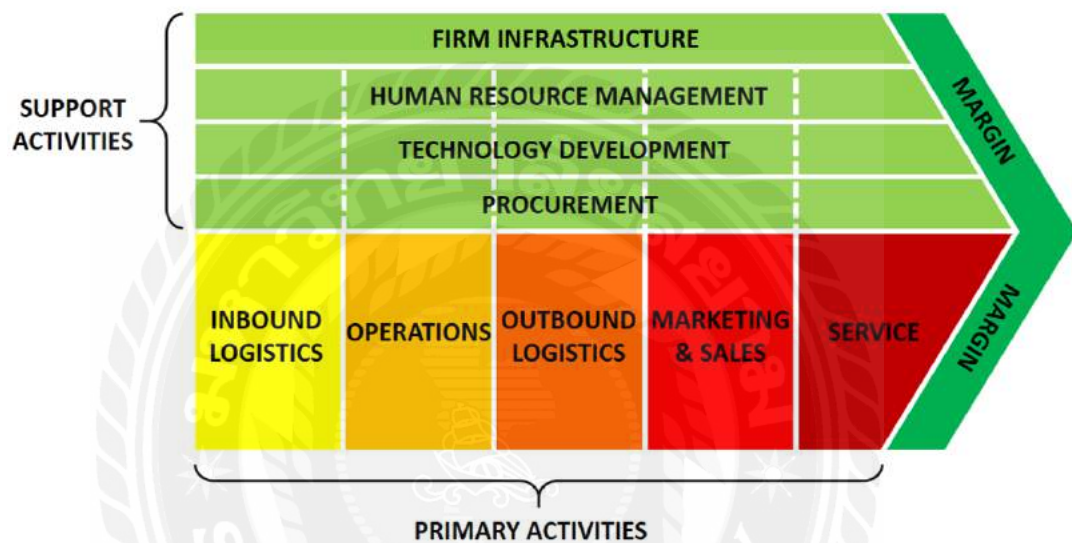


Figure 1 Porter's value chain

The concept of value chain was introduced as an analytical tool by Professor Michael Porter, who states: "To recognize the resources of cost behavior and existing and potential operational heterogeneity, the value chain breaks down a firm into strategically related activities (Porter,1980). It is by performing these important strategic activities more cheaply or better than its competitors that a firm gains competitive advantage." According to Prof. Porter, value management depicts the business process of an enterprise as a value chain, that is, it effectively combines the enterprise's production, marketing, financial, and other resources, and does a good job of planning, coordinating, supervising, controlling and so on in the process of production and operation of the products to make the enterprise form an interconnected and inextricably linked whole. He divided the value activities of an enterprise into two categories: basic activities and auxiliary activities, which mainly involve the

production, sales, and after-sales service of products, and auxiliary activities, which mainly include technology, human resources, and other functional activities.

Later, Peter Haines put forward the idea that the value chain is "a transportation line that integrates the value of materials", and he redefined the value chain from the perspective of the ultimate purpose of value realization. While Haines took customer demand for products as the end point of the production process, included raw material suppliers and customers in the value chain system, and extended the value chain from inside the enterprise to outside the enterprise, Porter's value chain included only production-related behaviors (Hines, 1998).

The concept of virtual value chain was first introduced in 1995 by Jeffery F. Rayport and John J. Sviokla of Harvard Business School. In the process of enterprise survival, competition is inevitable in two worlds: the visible and tangible material world and the invisible and intangible virtual world. The virtual world is made up of information, mainly referring to e-commerce, a new value growth chain. The management content and value-added activities of these two value chains are different: the tangible value chain is the enterprise's procurement, production, and sales, while the virtual value chain is the process of collecting, organizing, and distributing information (Shank & Govindarajan, 1993).

With the continuous development of information technology, the emergence of the concepts of value chain strategic alliance and value network has also contributed to the research of value chain theory (James, 2007). At the same time, many scholars in China have begun to understand and study value chain theory in depth, and have contributed to the development of value chain theory.

2.3 Cost Control Theory

Cost control is to systematically calculate and regulate the expenses of the enterprise in the process of production and operation under the guidance of the established objectives, to find deviations and correct them in time, and to ensure the normal realization of the enterprise's profits (Cooper, 1998). The process of cost control is a process of discovering cost weaknesses and analyzing and controlling them, which is an effective method of seeking ways to reduce costs. Through scientific and reasonable cost control, enterprises can effectively reduce costs and improve market

competitiveness. Cost control generally includes a series of processes such as cost prediction, decision-making, planning, control, analysis, and assessment, which is an all-round and three-dimensional scientific management process (Pellet, 2004).

In the traditional cost control concept, everything revolves around the center of the "product". Cost control belongs to the scope of cost bookkeeping, and the main user of information is the shareholders, who are generally concerned about consumption in the production process. Before the Industrial Revolution, accounting was only about business transactions between companies (Hax. & Majluf, 1995). After the Industrial Revolution, when mass production began to appear, manufacturing industries began to pay attention to cost information to reduce the cost per unit of product and began to utilize cost information to evaluate the performance of internal management and production workers. Traditional cost control is to control production costs from the perspective of operators, and its main purpose is to control and reduce product costs, with the basic procedures of costing, costing, calculating variances, and controlling variances (Shank, 1992).

Modern cost control mainly focuses on "management", and the meaning of cost becomes broader. From the owner's point of view, modern cost control defines cost as "expenses incurred to achieve a specific economic purpose. The center of modern cost control has shifted and is no longer centered on the "product" but on the "management cost," emphasizing cost control from a management perspective. The modern concept of cost control shifts cost management from after-accounting to after-control, which is a breakthrough in the concept of cost management. At this stage, cost control methods are growing rapidly, such as target cost control, cost planning, strategic cost control, and so on. Modern cost control methods have changed from traditional cost control consisting of a single method to a system of cost control methods consisting of multiple methods, which is an open system.

The operation cost control concept is a stage of cost control centered on "operation". The job cost control method starts from the job, analyzes the cost drivers, and changes to the multi-driver cost control view, which finally forms the job cost control view. In the operation cost control view, what enterprises account for is no longer product cost, but financial cost and management cost, and the focus of cost management is shifted from in-transit control, after-accounting, and analyzing reports to how to forecast, make decisions, and plan cost, which is a kind of multi-cost view of control. The production process based on the operation chain exists to create value for

the customer, and only those operations that add value and the necessary non-value-added operations have any meaning to survive (Sun,2002).

The value chain view of cost control, which has become popular in recent years, refers to the use of value chain analysis to reduce corporate costs and thereby achieve cost control. In the value chain cost control concept, the cost control scope of an enterprise takes the value chain as the foothold, takes the production stage as the node, and extends forward and backward respectively, extending forward to the supplier and product planning and design stage, and backward to the product sales and after-sales service stage, and the whole process includes the supplier cost, product design cost, purchase cost, production cost, sales cost and consumer cost, etc (Yan & Li, 2003). At this time, the cost control shows a strategic and strategic approach, and the cost control is not only a cost control approach but also a cost control approach. At this time, cost control shows strategic, systematic, comprehensive, and proactive, so that cost control and enterprise development are organically combined.

2.4 Past research

John Shank and Govindarajan introduced value chain analysis to the field of strategic cost management, exploring how firms can conduct strategic cost management, with a three-pronged framework: value chain analysis, strategic positioning, and cost driver analysis (Shank, 1992).

Jeffery F. Rayport and John J. Sviokla proposed a virtual value chain, in which they argued that value-added material activities constitute the traditional value chain and value-added information activities constitute the virtual value chain (Shank & Govindarajan, 1993). Physical and virtual value chains are different in terms of economic principles, management content, and value-added processes. While the physical value chain consists of a continuous series of activities, the virtual value chain is a non-linear matrix with potential inputs and outputs that can be accessed and distributed through various channels. In the virtual economy, information is no longer an adjunct to value generation but appears as a source of value, and information itself can be characterized as a value chain model. In the virtual value chain, the activities that create value include collecting, organizing, selecting, synthesizing, and distributing information, and these activities can add value.

In his book *Value Chain Management*, Zhang (2001) points out that the value chain is the organic integration of production, marketing, finance, human resources,

and other aspects of the enterprise, coordinating the work of each link to form an interconnected whole, which is a collection of capital, material and information flows. Sun (2002) divides the enterprise value chain into three categories: internal value chain, vertical value chain, and horizontal value chain, and takes the value chain analysis as the main line to reconstruct the discipline of management accounting.

Based on partnership and information sharing, Yin and Wang (2010) analyzed the application of two value engines, relational rent, and cross-organizational learning, in supply chain cost control. The way to increase customer value through supply chain cost control is called a value engine, and relational rent and cross-organizational learning are two important ways to increase customer value in modern enterprises. The essence of the supply chain is different from traditional enterprises, and partnership and information sharing portray its intrinsic characteristics from the dimensions of static attributes and dynamic mechanisms, respectively.

Liao and Jia (2012) used a field study to give us a clear picture of the implementation of cost management and cross-organizational control in the enterprise value chain. The article focuses on the interaction between customers, suppliers, and production processes, using Shennan Electric Road as a case study. The study finds that the value chain cost management of SZEC is very different from Western value chain accounting theories and practices and that SZEC's innovations in value chain structure, flexible organization, and customer value guidance have enriched China's management accounting practice and are great significance to the development of cost management accounting in China (Chu, 2009).

2.5 Research Framework

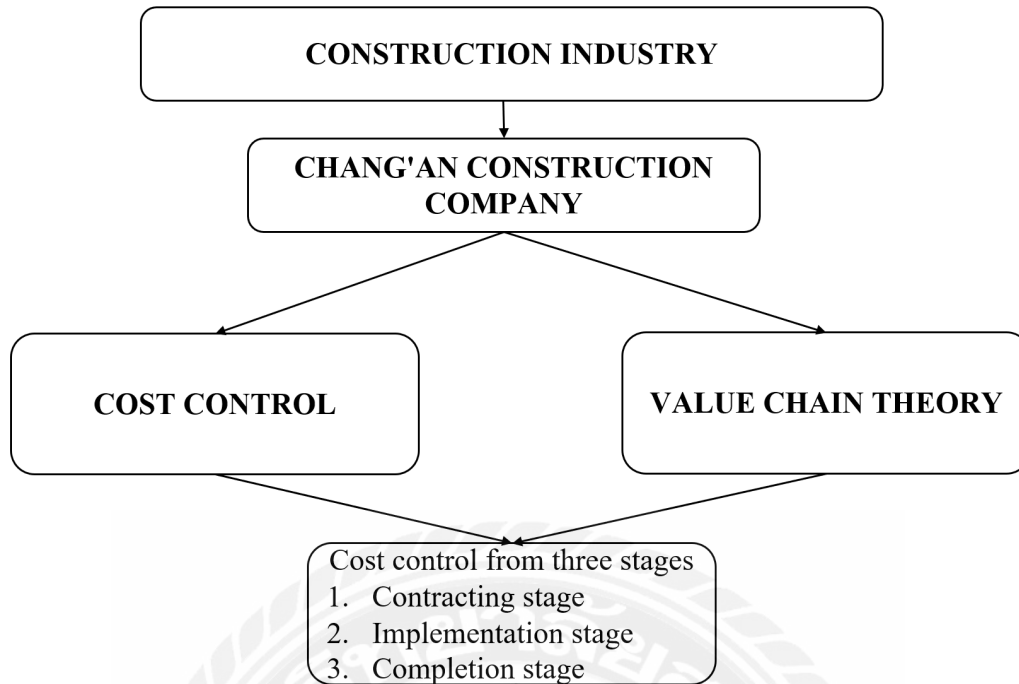


Figure 2 Research Framework

2.6 Chang'an Construction Company brief

Chang'an Construction Company was founded in 1989, later approved by the Beijing Municipal People's Government, and restructured into a wholly state-owned company, with a registered capital of 550 million yuan, corporate governance, and organizational structure of the general manager under the leadership of the board of directors. Chang'an belongs to the construction enterprise, subordinate to more than 20 secondary subsidiaries, with a workforce of more than 7,000 people. Chang'an was founded more than 30 years ago, gradually growing into a large-scale comprehensive construction enterprise group integrating construction, real estate development, municipal administration, metro, and garden protection. Over the past 30 years since its establishment, Chang'an Construction Company has gradually grown into a large-scale comprehensive construction enterprise group integrating engineering construction, real estate development, municipal government, subway, and garden protection. The group has the special grade qualification for general contracting of building construction, the first-grade qualification for real estate development, and the first-grade qualification for general contracting of municipal services, and has undertaken many major construction projects such as the Central Plaza, the Hao Yang Building, the Xiao Jia He Road Bridge, the Beijing Tong Ren Tang Pharmacy, and the Jiao Men Subway Station. By the end of 2014, Chang'an Construction Company had completed more than 180 Great Wall Cup projects and more than 20 Luban Prize and National Excellent Projects. Since its

establishment, in the spirit of being people-oriented, adhering to the basic line of the Party, constantly reforming and innovating, and leading the overall development with the scientific outlook on development, the overall advantages and comprehensive strength of the enterprise have been continuously enhanced.



Chapter 3 Research Methodology

3.1 Introduction

This study's research method is a documentary method, and the main content is to analyze the value chain and cost control of Chang'an Construction Company. First, this study uses literature reading and secondary data collection methods to collect relevant literature about value chain theory and cost control theory. Firstly, this study uses literature reading and data collection methods to collect relevant literature on value chain theory, cost control theory, and value chain cost control theory, and then carefully reads and categorizes them to form the current status of domestic research and foreign research, and then reviews them in chronological order. Secondly, this study studies the development and evolution of value chain theory, cost control theory, and value chain cost control theory from the perspective of vertical development, and explores the development law of theories in related fields. Finally, the case study method is used to combine the value chain theory and cost control theory, apply the theory to practice, analyze and study the actual situation of cost control in enterprises, and draw case insights.

3.2 Research design

In the following chapters, this study will first analyze the activities of Chang'an Construction Company according to the five main activities in the value chain theory to correspond to the current state of the company and to analyze how the company currently operates when it comes to construction projects.

Then the cost control processes and standards in the construction industry are briefly discussed to lay the foundation for the third step.

Finally, this study will develop strategies for the construction industry to positively influence cost control in the three construction phases based on the first step of Chang'an Construction Company's application of value chain theory and the second step of cost control criteria.

Considering the comprehensive analysis of the construction industry through the lens of the value chain theory, this study pivots around understanding how Chang'an Construction Company navigates these intricacies to control its costs and improve profitability. Recognizing that construction firms exist within a dynamic environment,

where every project carries its own set of challenges, our study seeks to discern the patterns, strategies, and methodologies employed by Chang'an in its operations. This will enable a holistic understanding of the value chain's impact on construction companies' bottom line.

At the core of this research is the intricate interplay between various cost-influencing factors. Labor, being a primary component in construction, often fluctuates based on skill level, demand-supply dynamics, and regional economic factors. Material costs, another vital component, vary depending on procurement strategies, global market conditions, and locational advantages or disadvantages. Equipment costs, overhead costs, and temporary facilities costs add another layer of complexity, especially in an industry known for its tight margins. For Chang'an, each of these elements holds the potential to either elevate its profitability or erode its margins, and our study seeks to determine the mechanisms the company has put in place to ensure the former.

Additionally, the study design places significant emphasis on the post-construction phase, particularly completion, inspection, and warranty services. As our preliminary assessment indicates, these stages are not mere procedural steps but potent marketing tools in disguise. How Chang'an manages these aspects can greatly influence its brand reputation, market competitiveness, and client trust. By examining their approach in this phase, the study aims to unveil best practices, potential areas of improvement, and the overarching impact on cost control.

Chapter 4 Finding and Conclusion

4.1 Current situation of the value chain in Chang'an Construction Company

The internal value chain of a Chang'an Construction Company consists of two types of activities: basic activities and auxiliary activities, which is the same as the value chain model proposed by Prof. Porter. The basic activities of a Chang'an Construction Company include five main activities: project contracting, construction preparation, project construction, completion and inspection, and post-sales warranty services, while the auxiliary activities include four: procurement management, technology development, human resource management, and enterprise infrastructure.

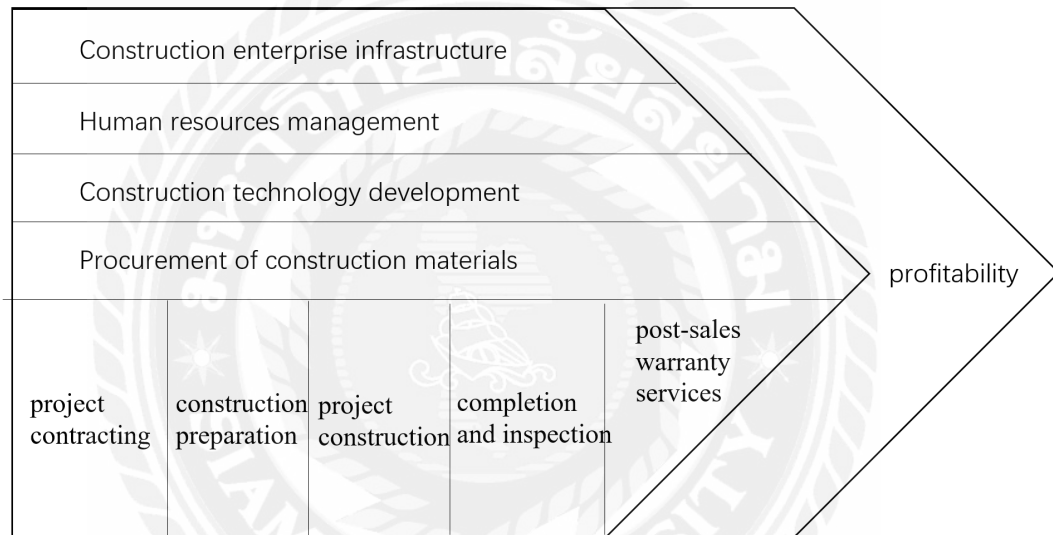


Figure 3 Chang'an Construction Company value chain

4.1.1 Project contracting

In the construction context, Inbound Logistics typically emphasizes the flow of information and materials into the organization to commence a project. In this light, project contracting can be seen as the gateway through which these resources are accessed.

Project contracting goes beyond merely winning bids. It is about strategically positioning a construction enterprise in the market, ensuring that it is tuned into the most lucrative and suitable opportunities. The contracting process requires a keen sense of the market dynamics, understanding not only what competitors are doing but also predicting future market trends and client needs. This proactive approach helps firms

identify potential projects that align with their strengths, capabilities, and strategic objectives.

When preparing bidding documents, the enterprise should not only gather general market and competitor information but also pay attention to the nuances of material availability, labor force dynamics, local regulations, and potential challenges related to the project's location and nature. This rigorous preparation can enhance the chances of submitting a winning bid and, subsequently, lead to smoother project execution.

Organizing bidding activities isn't just about participating in tenders; it's about building relationships with clients, stakeholders, and even competitors. It's through these activities that an enterprise can understand client expectations, get insights into project complexities, and evaluate if the project aligns with the firm's long-term goals.

Signing project contracts marks the culmination of the inbound phase, setting the stage for subsequent value-adding activities. However, the terms of these contracts, negotiated effectively, can define the ease of operations and the profitability of the venture.

In essence, project contracting, when viewed through the lens of value chain theory's Inbound Logistics, underscores its pivotal role in setting the foundation for a construction enterprise's value creation process. Without effective contracting, the entire chain could be jeopardized, emphasizing its role as a linchpin for subsequent activities and the enterprise's overall success.

4.1.2 Construction preparation

Drawing from the value chain theory's primary activity of Operations, the concept of "Construction preparation" in the Chang'an Construction Company is pivotal. In the realm of the construction sector, Operations delve into the nitty-gritty, ensuring that the theoretical aspects from the contracting phase are translated into tangible actions, paving the way for the actual construction to take place.

Construction preparation acts as the bridge, harmonizing the vision set out in the project contract with the ground realities of executing that vision. This phase necessitates a meticulous and comprehensive approach, as it establishes the groundwork upon which the success of the entire project rests.

Starting with a field investigation, it's crucial to recognize that every project site comes with its own set of unique challenges and opportunities. This could range from understanding the topography, soil conditions, local climate, to potential obstacles like nearby structures or water bodies. An in-depth site analysis can reveal insights that significantly impact the construction methodology, choice of materials, and even project timelines.

Following the site assessment, charting out a detailed construction plan becomes paramount. This isn't merely about scheduling tasks but involves forecasting potential bottlenecks, identifying areas where innovative solutions can speed up processes, and preparing contingency plans to manage unforeseen challenges.

Materials and labor form the backbone of any construction project. Deciding on the type of materials, weighing the trade-offs between cost, quality, and availability can significantly influence the project's bottom line. Furthermore, with labor, it's about ensuring that the right skills are available at the right time. Efficient management of both these resources also touches upon the ethical aspects of sustainable sourcing and fair labor practices.

Leveraging market resources involves a keen understanding of the supply chain, forging strong relationships with suppliers, and even innovating with alternative materials or techniques that can provide a competitive edge. Concurrently, tapping into enterprise resources – like proprietary technologies, in-house expertise, or specialized equipment – can drive efficiencies, reduce costs, and ensure that the construction preparation phase is set on a trajectory of success.

In sum, Construction preparation, when mapped to the Operations activity in the value chain theory, accentuates its role as the heart of the construction process. It's where strategy meets execution, and where the rubber meets the road, dictating the pace and quality of the entire construction journey.

4.1.3 Project construction

Tapping into the third primary activity of the value chain theory, Outbound Logistics, "Project construction" in the Chang'an Construction Company emerges as the heartbeat where visions materialize into tangible structures. In many ways, the essence of Outbound Logistics aligns seamlessly with the nature of project construction, which is all about delivering the final product to the end user or client.

The stage of Project construction is not just the culmination of prior planning and preparations, but a dynamic and evolving phase requiring constant adjustments, re-evaluations, and on-the-spot decisions. While the construction contract lays down the foundational requirements, the true prowess of a construction enterprise shines in how they manage the intricate dance of resources, timelines, and quality expectations during this phase.

Material costs play a significant role, demanding astute procurement strategies. This involves not just timely sourcing but also ensuring that materials align with quality standards, environmental sustainability norms, and cost efficiency. Labor costs, on the other hand, underscore the importance of workforce management. It's essential to deploy skilled labor at critical construction junctures, provide them with necessary training, and ensure their well-being and safety.

Equipment costs highlight the need for optimal machinery utilization, preventive maintenance schedules to reduce downtimes, and decisions on leasing versus ownership based on project durations and frequencies. Overhead costs, encompassing indirect construction costs, stress the importance of streamlined operations, minimizing wastages, and efficient resource allocation. Temporary facilities costs remind us of the infrastructure required to support the construction process, from onsite offices, storage units, to worker accommodations.

In the grand theater of project construction, effective synthesis of enterprise resources, as highlighted in the value chain, becomes paramount. By integrating both upstream (like suppliers or raw material producers) and downstream (like distributors or sales teams) enterprises, a construction company can truly unlock synergies, optimize processes, and deliver projects that stand as testimonials of efficiency and quality.

Moreover, elevating the level of project management is more than mere task tracking. It's about proactive risk management, stakeholder communication, quality assurance, and ensuring that the project remains aligned with its original objectives, even as it adapts to on-ground realities.

In essence, when viewed through the lens of the value chain's Outbound Logistics, Project construction evolves from a task-oriented activity to a holistic, strategy-driven

endeavor that encapsulates the very soul of what construction enterprises stand for: building the future, one brick at a time.

4.1.4 Completion and inspection

Delving into the fourth primary activity of the value chain theory in Chang'an Construction Company, Marketing and Sales, the "Completion and Inspection" phase in the construction industry becomes a pivotal point, where not only is the tangible product assessed, but the enterprise's brand image and reputation are also at stake.

Completion and inspection, at its core, is much more than just a procedural step. It's the first opportunity for the client to see the final realization of their vision, and for the construction enterprise, it's the moment of truth, where the quality of their workmanship stands trial. While construction involves countless decisions, labor hours, and meticulous planning, this stage is where all those efforts become evident. A successful completion, where the project meets the pre-defined standards without major issues, sets the stage for a positive final impression.

The inspection phase is not merely a technical assessment but a marketing tool in disguise. Every flaw detected, and every discrepancy noted becomes a potential dent in the company's reputation. However, prompt corrective actions, transparency in dealings, and genuine accountability can turn potential negatives into trust-building exercises. In the world of construction, trust is a cornerstone, often acting as a significant differentiator in a competitive market.

Post-completion, the acceptance and settlement phases reaffirm this trust. Smooth and transparent financial settlements without disputes signify a job well done and lay the foundation for future collaborations. However, it's the warranty service that truly embodies the principles of Marketing and Sales in the value chain theory. Post-project delivery, the real test of an enterprise's commitment begins. By providing exemplary warranty services, an enterprise does more than just rectify issues; it reinforces its brand promise.

Moreover, in an era where word-of-mouth and digital reviews significantly influence business prospects, a sterling warranty service becomes a potent marketing tool. It not only fosters client loyalty but also amplifies positive word-of-mouth, drawing in potential clients. A construction enterprise's dedication to standing by its

work, long after the project's completion, is a testament to its integrity and customer-centric approach.

In essence, through the Marketing and Sales lens of the value chain, "Completion and Inspection" are not mere end-of-project tasks. They become strategic imperatives that shape an enterprise's brand perception, influence its market positioning, and ultimately, determine its success in the competitive construction landscape.

4.1.5 Post-sales warranty services

Post-sales warranty services in the Chang'an Construction Company encompass the array of services and guarantees offered after the completion of a construction project. These services ensure the functionality, safety, and durability of the buildings or structures. Quality assurance promises the rectification of any defects or issues that arise within the warranty period. Regular inspections might be conducted to guarantee the safety and operability of the building, encompassing structural, electrical, and mechanical systems. Maintenance and repair sessions address wear and tear, while customer support offers guidance on the operation and upkeep of the facility. Emergency response capabilities can also be included to address immediate concerns like leaks or structural issues. From a value chain perspective, these post-sales services not only bolster customer trust but also present an opportunity for construction companies to foster long-term relationships with clients. This enhances the overall value as satisfied customers become repeat clients and offer word-of-mouth referrals. Moreover, through these services, construction firms can identify and rectify potential issues in a timely manner, elevating the quality of their work and reputation.

4.2. Standard for cost control

First, phased control. The occurrence of the cost of construction enterprises is a full-cycle process, and the project department has the characteristics of one-time and non-repeat. The cost of the project can be divided into three stages, respectively, for the contracting stage, implementation stage, and completion stage, the contracting stage of the cost of the main bidding costs, including the implementation stage of the cost of the plan and the fixed cost, after the completion of the preparation of the cost report for cost analysis. The cost control content and focus of each stage are different, so the cost should be controlled by stages.

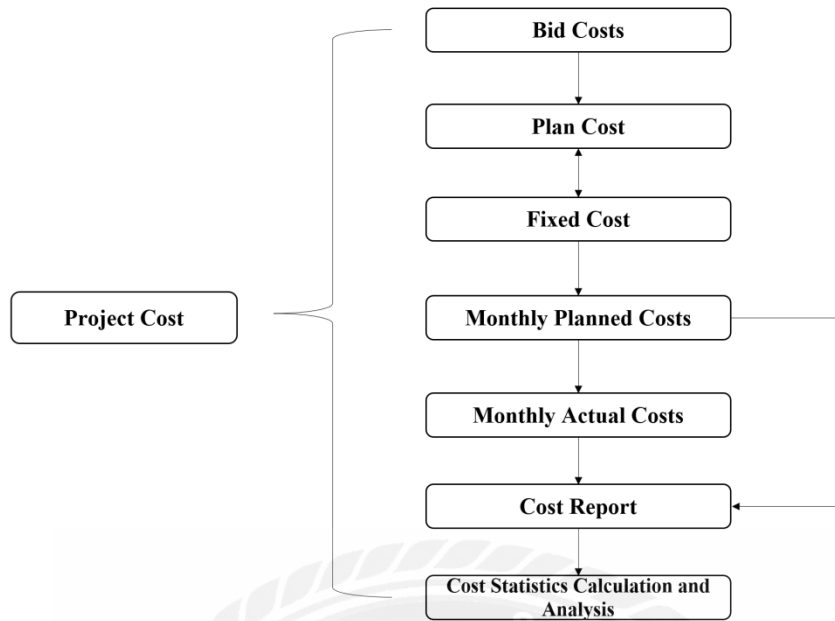


Figure 3 Project vertical cost chart

Second, the standard of dynamic control. Cost control is a systematic process, all departments should be involved in real-time control of cost control. In the actual implementation process, the planned cost may no longer be applicable due to market changes, etc., which is necessary to re-position the market situation and enterprise situation and prepare a more appropriate cost plan. If there is a big difference between the actual cost and the planned cost, the enterprise has to look for the reason for cost deviation and control the cost overrun in time to ensure that the cost plan can be carried out in the next work process. If the cost savings, in the case of ensuring the quality of the project, the enterprise should continue to play this spirit of savings, and control project costs.

Third, people-oriented standards. In the construction industry due to its industry specificity, safety costs are a problem that can not be ignored. The occurrence of safety accidents will not only affect the construction site staff's mood but also have an extremely bad influence on the enterprise, reducing the competitiveness of the enterprise's market. The development of the enterprise can not be separated from the staff's efforts, and the staff's growth can not be separated from the enterprise's environment, the two are interdependent and grow together. Therefore, in enterprises in the implementation of cost control process, we must adhere to the people-oriented, pay attention to the enthusiasm and innovation of the staff, improve the staff's sense of identity in the enterprise, care for the staff, respect for the staff, so that everyone can participate in the cost control.

4.3 Different construction phases affect cost control

According to the analysis in the previous subsection, the basic activities of a construction company include five main activities: project contracting, construction preparation, project construction, completion and inspection, and warranty service. The occurrence of the cost of construction enterprises is a full-cycle process, and the project department is characterized by one-time and non-repeating. The cost of the project can be divided into three phases, namely, the contracting phase, the implementation phase, and the completion phase, the cost of the contracting stage is mainly the bidding cost, and the implementation stage includes the planned cost and fixed cost. After completion, cost reports should be prepared for cost analysis. The cost control content and focus of each stage are different. So, the cost should be controlled in stages.

4.3.1 Cost control during the contracting phase

Tendering first arose in the United Kingdom as a method used by the government in the procurement of materials. With the improvement and soundness of the laws and regulations relating to tendering, tendering has been widely used in the construction industry and has gradually become a common method of contracting. Tendering can prevent backroom operations and is a relatively fair and impartial method.

The cost of project contracting is mainly the bidding cost, which mainly includes the preliminary public relations fee, the winning service fee, the bidding deposit, the additional terms and conditions after winning the bidding, and others. Project contracting stage to prepare bids, the preparation of bids to go through professional training, not because of the quality of personnel problems caused by the existence of problems in the bidding process to the enterprise in the bidding process to cause unnecessary cost losses. When preparing bids, the preparers should study and analyze the project quality requirements and list quotations carefully. Chang'an Construction Company In the process of development, the enterprise divides the business development zone by region, and the project department and the office in charge of the region are responsible for the business development work in the region. Each project department sets up a group of experts to study and analyze the owner's tender and the market situation of labor, raw materials, and machinery and equipment in the region, and prepare reasonable bidding materials to ensure that the cost of the project can be controlled at an acceptable level at the contracting stage, to increase the profit of the project.

4.3.2 Cost control during the project implementation phase

Cost control in the project implementation stage can be divided into two parts: cost control in the project preparation stage and cost control in the project construction stage. The cost control in the project implementation stage mainly includes professional training for relevant employees to improve their professional quality and professional competence, to ensure that the project construction process is not due to personnel negligence and practice ability problems resulting in cost losses; the development of a reasonable and comprehensive construction program, the raw materials, machinery and equipment, labor costs, and other direct costs to carry out strict control, real-time supervision, to prevent waste; to do a good job in the safety and protection measures, standardize personnel operations, regular maintenance, and so on.

The project preparation stage is mainly to investigate the project, including topography, above-ground facilities, underground pipelines, geology and hydrology, land acquisition and relocation, three-way situation, etc. In this stage, the enterprise has to formulate a cost plan. At this stage, the enterprise should formulate a cost plan, which is the basis of cost control in the construction stage. The cost plan should be specific and reasonable, with an operable system, laying a good foundation for the subsequent cost control of the project. Before project implementation, assign an experienced team to conduct a site visit to the construction project, and set up a cost target and plan based on the bidding price and the actual situation in the area.

During the construction phase of the project, the cost plan formulated in the preparation phase was strictly implemented, and cost variances were summarized at regular intervals to find out the reasons for the variances and make corrections promptly. Chang'an Construction Company and its subsidiaries required the project departments to summarize the cost variances every week and prepare cost analysis reports every month, and to find out the reasons for cost overruns promptly and carry out cost control during the construction process in the following years. The leaders of the Group will select projects every month to listen to the cost analysis report of the projects, put forward opinions and suggestions on the problems in cost control of the subordinate enterprises, and encourage the subordinate enterprises to actively implement cost control.

4.3.3 Cost control during the project completion phase

After the project is completed and accepted, many enterprises will put their energy into other projects, resulting in the finalization of the work of the front being long,

machinery, and equipment not being transferred, the cost still incurred, the construction phase of the gain is gradually broken down and disappeared. Therefore, enterprises must carefully arrange the final closing work to ensure that machinery, equipment, and personnel are orderly withdrawn from the site. When the project is near the end and enters the stage of completion and settlement, the financial personnel should calculate the cost of each stage in time and make a comparison and analysis with the planned cost, and the project management should reasonably allocate the site personnel and clean up the site materials and machinery and equipment in time, to prevent unnecessary costs and expenses. In the closing work, the staff should synchronize the preparation of acceptance data to ensure the authenticity and accuracy of the data, and at the same time start to arrange for the relevant departments to enter the site for acceptance and inspection, which can shorten the time of the acceptance phase and save costs for the enterprise.

After the completion of the project, Chang'an Construction Company integrates on-site resources promptly, conducts project cost analysis, and summarizes the experience of the project. After delivering the project, Chang'an Construction Company will contact the property company and the owner regularly to learn about the problems that exist in the subsequent use process and solve them promptly, and at the same time provide reference experience for future projects to avoid unnecessary cost losses caused by the same problems. This will not only enable the enterprise to maintain a good cost advantage, but also win a good reputation among customers, which is conducive to the maintenance of the enterprise's competitive advantage in the industry.

4.4 Conclusion

Through an in-depth examination of Chang'an Construction Company's value chain cost control, several key findings have emerged. Tendering, when executed with expertise, sets a foundation for cost efficiency and project profitability. Region-specific strategies, as adopted by Chang'an, enable tailored, effective bid preparations.

Cost management, split between the preparation and construction phases, is crucial. A well-crafted cost plan, grounded in thorough site analysis, guides construction-phase expenses. Continuous monitoring and timely adjustments are essential for alignment with this plan.

Post-completion isn't just an endpoint but a phase of reflection and strategy optimization. Efficient resource allocation post-project and regular stakeholder engagement not only curb future costs but also enhance the company's reputation.

In essence, strategic tendering, meticulous planning, rigorous cost oversight during execution, and post-project evaluations are pivotal in ensuring cost-effectiveness in the construction sector. This study, centered on Chang'an Construction Company, offers valuable insights for broader industry applications.



Chapter 5 Recommendation

5.1 Recommendation

Considering the specific conditions of China, environmental protection and Internet finance are the hot issues that people are concerned about, so cost control based on value chain theory will gradually approach these two aspects in future development. With the deepening research on the theory and practice of environmental accounting and Internet finance, the development trend of value chain cost control is mainly manifested in the following two aspects: firstly, the environmental cost control and management of green value chain in the context of low carbon economy; secondly, the research on the cost control of capital flow of value chain in combination with Internet finance, e-commerce, and financial shared service.

Due to the weak theoretical foundation and various constraints, there are still many deficiencies in the writing of this paper, and we hope that we can systematically study the issue of value chain cost control in our future study and work.

References

- Cheng, H. W., Zhang, Y. M. & Li, X. (2007). Research on value chain accounting based on modularization. *Accounting Research*, (3), 21-25.
- Chu, B. (2009). Introduction to the generation and development of value chain cost control. *Business Accounting*, 7(14), 53-54.
- Cooper, R. (1998). *Design of cost management system*. Pearson Education.
- Gao, J. Z., Ma, J. W., Zhang, L. S., Gao, S. L. & Li, G. H. (2008). Application of value chain theory in cost control of construction enterprises. *Construction Economy*, (8), 104-106.
- Han, I. C. & Wang, H. M. (2005). Cost control is based on modern value chain theory. *China Agricultural Accounting*, (2), 20-22.
- Hax, A. C. & Majluf, S. (1995). *The strategy concept and process: A pragmatic approach*. Pearson Education.
- Huang, D. X. (2014). Research on the expansion of cost strategy of enterprise competitors--Based on value chain perspective. *Finance and Accounting Newsletter*, (6), 22-24.
- James, B. (2007). The strategic cost management system project. *Journal of Public Economics*, (5), 43-49.
- Li, B. X. (2003). Several theoretical issues in value chain accounting research. *Accounting Newsletter*, 7(279), 8-10.
- Ma, Y. (2014). Research on cost control and management of enterprises based on value chain analysis. *Finance and Economics*, (1), 50-52.
- Mu, L. J. & Jia, Q. (2012). Cross-organizational resource integration based on value chain cost management: A field study. *Accounting Research*, (5), 67-71.
- Pan, Y. S. & Wei, W. (2014). Environmental cost control of manufacturing enterprises under the perspective of value chain. *Finance and Accounting Monthly*, (2), 30-31.
- Porter, M. E. (1980). *Competitive strategy*. The Free Press.
- Shank, J. (1992). Strategic cost management: Tailoring controls to strategies. *Journal of Cost Management*, (7), 93-96.
- Shank, J. & Govindarajan, V. (1993). *Strategic cost management*. The Free Press.
- Sun, M. H. (2013). Research on cost management of building construction enterprises based on value chain theory. *Finance and Economics*, (8), 36-39.
- Sun, M. Z. (2002). *Theoretical thinking and framework of management accounting*. Renmin University of China Press.

- Yan, D.W. (2004). Research on value chain accounting: Review and Prospect. *Accounting Research*, (2), 3-7.
- Yan, D. W. & Li, Y. (2003). Under the guidance of the spirit of 16th national congress, creating a new situation of accounting theory research new thoughts on establishing value chain accounting. *Accounting Monthly*, (6), 4-5.
- Yang, Z. N. (2005). The change of value chain accounting management informationization. *Accounting Research*, (11), 36-40.
- Yin, J. P. (2014). Discussion on enterprise full value chain cost management. *Finance and Economics*, (9), 53-54.
- Zhang, J. J. (2001). *Value chain management - Optimizing business processes and organization enhancing comprehensive competitiveness of enterprises*. China Price Press.
- Zhang, J. J. (2003). Grasping the pulse of value chain management development. *Beijing Industry and Commerce*, (7), 47-49.
- Zhou, H. (2013). Research on business performance evaluation of enterprises based on value chain accounting. *Accounting Newsletter*, (8), 12-14.

